

SD-99555-01-A1

SHEET INDEX

[illegible][illegible]

ENG CODE	ISSUE	DATE ISSUED	ISSUED BY	APPROVED BY
1	1	9-5-72	SD	SD
2A	2A	9-11-73	ATL	SD
3A	APP 1A	5-8-74	BD	SD
4B	2A APP 2B	5-8-74	SD	SD
5A	APP 3A	4-9-74	ATL	SD
6B	2A APP 4B	10-9-74	ATL	SD
7A	APP 5A	4-11-75	ATL	SD
8B	2A APP 6B	10-23-75	ATL	SD
9B	3B	4-26-76	OLG	SD
10B	4B	4-16-77	REO	SD

SHEET INDEX NOTES		SUPPORTING INFORMATION		
1. WHEN CHANGES ARE MADE IN THIS DRAWING, ONLY THOSE SHEETS AFFECTED WILL BE REISSUED. 2. THIS SHEET INDEX WILL BE REISSUED AND REPOST UP TO DATE EACH TIME ANY SHEET OF THE DRAWING IS REISSUED, OR A NEW SHEET IS ADDED. 3. THE ISSUE NUMBER ASSIGNED TO A CHANGED OR NEW SHEET WILL BE THE SAME ISSUE NUMBER AS THAT OF THE SHEET INDEX. 4. SHEETS THAT ARE NOT CHANGED WILL RETAIN THEIR EXISTING ISSUE NUMBER. 5. THE LAST ISSUE NUMBER OF THE SHEET INDEX IS RECOGNIZED AS THE LATEST ISSUE NUMBER OF THE DRAWING AS A WHOLE.	CATEGORY	NO.	NOTICE-- NOT FOR USE OR DISCLOSURE OUTSIDE THE BELL SYSTEM EXCEPT UNDER WRITTEN AGREEMENT.	
	EQUIPMENT DRAWINGS	J98625AA J98625 AD EN-2147		
	SYSTEMS COORD CTX'S	SD-99554-01 SD-66070-01		
	SMAS NO., 3 MANUAL ACCESS OUT	SD-1C497-01		
		30-99555-01	1899	ATTACHED STANDARD
		COMMON SYSTEMS COMMUNICATION PANEL FOR UTILITIES, TERMINAL EQUIPMENT		
		SD-99555-01-AI 14 SHEETS		
		BELL TELEPHONE LABORATORIES BELL SYSTEM		
		65		UNITED STATES OF AMERICA

LEAD INDEX

DESIG	LOCATION	
	FS	CAD
1A1 OR 1A2 KEY TEL SYSTEM		
A(1)-A(4)	1C2	1B3
A(5)	1C2	1B3
A(1)-A(4)	1C2	1B3
K(5)	1C2	1E3
L(1)-L(4)	1C2	1B3
L(5)	1C2	1E3
LG(1)-LG(4)	1C2	1B3
LG(5)	1C2	1E3
RG(1)-R(4)	1C2	1A3
R(5)	1A4	1A3
90	1A4	1B3
T(1)-T(4)	1C2	1A3
T(5)	1A4	1A3

CHS 1A TEL INTERFACE CKT 8 1B STA CLUSTER CONTROLLER		
B	2F3, 2G3	1B0, 1C0
R	2F3, 2G3	1B0, 1C0
RT	2F3, 2G3	1B0, 1C0
T	2F3, 2G3	1B0, 1C0
TT	2F3, 2G3	1B0, 1C0

CD OR PBX LINE		
R(1)-R(4)	1C2	1A3
R(5)	1A4	1A3
T(1)-T(4)	1C2	1A3
T(5)	1A4	1A3

LINE AND TRUNK CKT FOR MTCE COMM OR REPAIR SERVICE		
A(1)-A(4)	1C2	1B3
A(5)	1C2	1E3
A(1)-A(4)	1C2	1B3
K(5)	1C2	1E3
L(1)-L(4)	1C2	1B3
L(5)	1C2	1E3
LG(1)-LG(4)	1C2	1B3
LG(5)	1C2	1E3
RG(1)-R(4)	1C2	1A3
R(5)	1A4	1A3
90	1A4	1B3
T(1)-T(4)	1C2	1A3
T(5)	1A4	1A3

MANUAL ACCESS PANEL CKT NO. 1		
EL	2C3	1C0
IQ(1)-I(2)	2C3	1B7
MAN(1)-7)	2C3	1B7
RL	2C3	1C0
R	1A5, 2A1	1A0, 2C7
RT	1A5, 2A1	1A0, 2C7
RL	2B5	1C0
T	1A5, 2A1	1A0, 2C7
TT	1A5, 2A1	1A0, 2C7
TK1	2A5	1C0
TK2	1A5, 2A1	1A0, 2C7
TL	2B5	1C0

DESIG	LOCATION	
	FS	CAD
MANUAL ACCESS PANEL CKT NO. 2		
EL	2C3	2F7
RL	2C3	2F7
R	2A0	2B7
RT	2A0	2B7
RTL	2C3	2F7
RL	2C3	2F7
T	2A0	2B7
TT	2A0	2B7
TTL	2C3	2F7
TK1	2A0	2B7
TK2	2A0	2B7
TL	2C3	2F7

ORDER WIRE CKT NO. 1		
R	1A3	1F0
RT	1A3	1F0
T	1A3	1F0
TT	1A3	1F0

ORDER WIRE NO. 2		
R	1B3	1D0
RT	1B3	1D0
T	1B3	1D0
TT	1B3	1D0

TANDEM PATCH BAY		
E(1)-E(6)	1B9	2B4
E(7)-E(12)	2E1	2B4
M(1)-M(6)	1B9	2B4
M(7)-M(12)	2E1	2B4
R(1)-R(6)	1B9	2B4
R(7)-R(12)	2E1	2B4
R(1)-R(6)	1B9	2B4
R(7)-R(12)	2E1	2B4
T(1)-T(6)	1B9	2B4
T(7)-T(12)	2E1	2B4
T(1)-T(6)	1B9	2B4
T(7)-T(12)	2E1	2B4

OPTION INDEX

APP OR WRS	RATED BY ISSUE	REF NOTES	LOC
Z	STD 2A		1C8, 1B7, 2F0, 2P1, 2G0, 2G1 CAD 1, 4, 5
T	STD 4B		1C8
X	STD 2A		1C8, 1D8, 2F0, 2F1, 2G0, 2G1 CAD 4
W	STD 2A HD 6B		1A1, 1(C-6)1, 1B0, 1B3 CAD 1
V	HC 4B		APP FIG. 2 2A8, 2B0, 2B2 2D0
T	STD 4B		APP FIG. 5 2A8, 2B6, 2C4 2D5, 2F9 CAD 9
S	STD 6B		1A1 CAD 1
R	AM 6B		1(C-6)1
Q			1(C-7)1, 1B1, 1B3
N	STD 6B		1(C-6)1
M	STD 8B		2F4
K	STD 8B		2B4, 2F4, 4
J	HD 1D		1B1, 1E6
G	STD 1D		1B1, 1F6

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COMMUNICATION PANEL

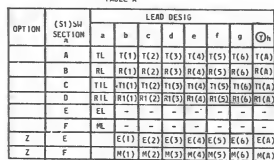
SD-99555-CI-A2

BELL TELEPHONE LABORATORIES

6S

BELL TEL. LAB.

COMMUNICATION PANEL



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FS 2 AUX COMMUNICATION PANEL

TABLE A

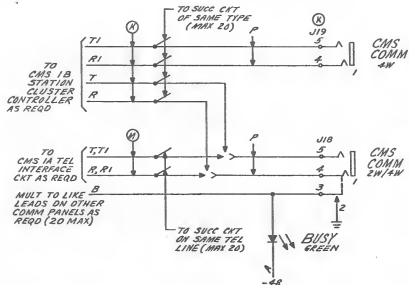
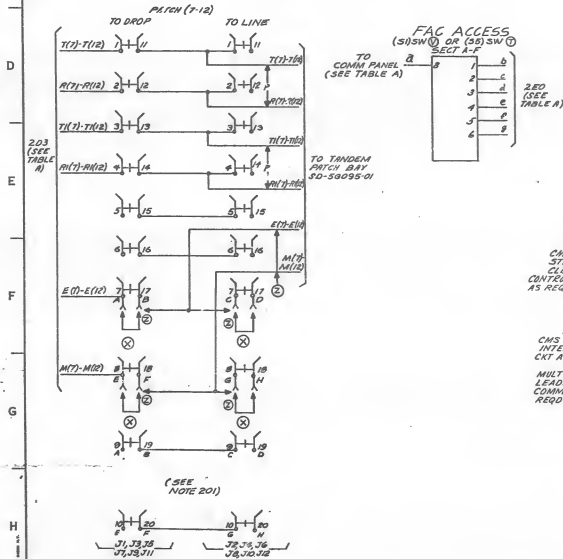
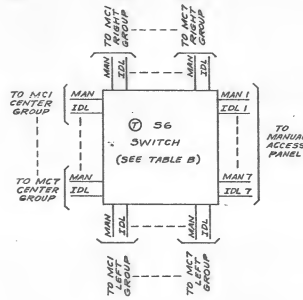
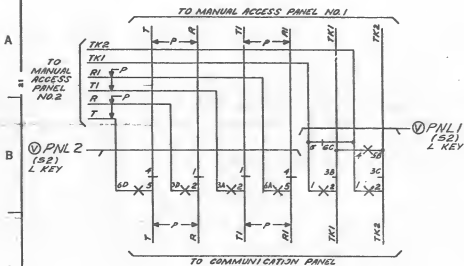
OPTION	S11 OR X551 SECTION	LEAD DESIG						
		a	b	c	d	e	f	g
A	TL	T(7)	T(8)	T(9)	T(10)	T(11)	T(12)	
B	RL	R(7)	R(8)	R(9)	R(10)	R(11)	R(12)	
C	TL	T(7)	T(8)	T(9)	T(10)	T(11)	T(12)	
D	RL	R(7)	R(8)	R(9)	R(10)	R(11)	R(12)	
E	EL	-	-	-	-	-	-	
F	FL	-	-	-	-	-	-	
Z	E	E(7)	E(8)	E(9)	E(10)	E(11)	E(12)	
Z	F	F(7)	F(8)	F(9)	F(10)	F(11)	F(12)	

TABLE B

NTE COMM GROUP	NTE COMM	MAN LEAD		IDL LEAD		TERM. STRIP NO. 2	
		(S6) SWITCH SECT. TERM.	(S6) SWITCH SECT. TERM.	(S6) SWITCH SECT. TERM.	(S6) SWITCH SECT. TERM.	RDW NO.	TERM NO.
L	1 ST.	A	1	A	5	8	6,5
	2 ND.	A	9	D	1	9	5,5
	3 RD.	B	5	B	9	10	6,5
	4 TH.	C	1	C	5	11	6,5
	5 TH.	C	9	D	1	12	6,5
	6 TH.	D	5	D	9	13	6,5
	7 TH.	E	1	E	5	14	6,5
C	1 ST.	A	2	A	6	1	4,3
	2 ND.	A	10	B	2	2	4,3
	3 RD.	B	6	B	10	3	4,3
	4 TH.	C	2	C	6	4	4,3
	5 TH.	C	10	D	2	5	4,3
	6 TH.	D	6	D	10	6	4,3
	7 TH.	E	2	E	6	7	4,3
R	1 ST.	A	3	A	7	8	4,3
	2 ND.	A	11	B	3	9	4,3
	3 RD.	B	7	B	11	10	4,3
	4 TH.	C	3	C	7	11	4,3
	5 TH.	C	11	D	3	12	4,3
	6 TH.	D	7	D	11	13	4,3
	7 TH.	E	3	E	7	14	4,3

TABLE C

MANUAL ACCESS PANEL LEAD NO.	(S6) SWITCH SECT. TERM.	(S6) SWITCH SECT. TERM.	TERM. STRIP NO. 2	
			RDW NO.	TERM NO.
MAN 1	A	127	1	6
IDL 1	A	47	1	5
MAN 2	A	87	2	6
IDL 2	B	127	2	5
MAN 3	B	47	3	6
IDL 3	B	87	3	5
MAN 4	C	127	4	6
IDL 4	C	47	4	5
MAN 5	C	87	5	6
IDL 5	D	127	5	5
MAN 6	D	47	6	6
IDL 6	D	87	6	5
MAN 7	E	127	7	6
IDL 7	E	47	7	5
NO COMM	E	87	-	-



FS 4 PATCH CIRCUIT

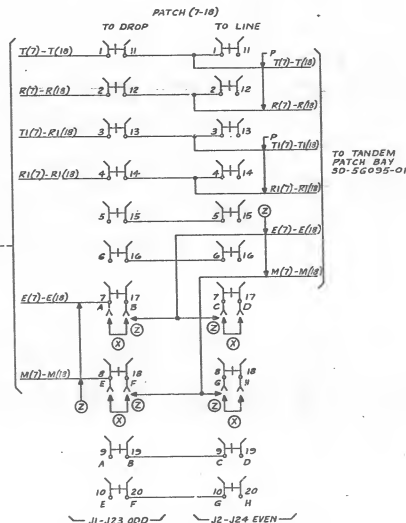
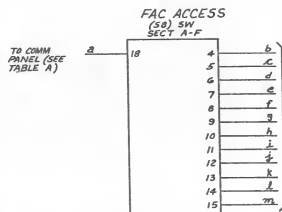


TABLE A FOR (50) SH

OPT	SECT	LEAD DESIGN											
		a	b	c	d	e	f	g	h	i	j	k	l
	A	TP	T(7)	T(8)	T(9)	T(10)	T(11)	T(12)	T(13)	T(14)	T(15)	T(16)	T(17)
	B	RP	R(7)	R(8)	R(9)	R(10)	R(11)	R(12)	R(13)	R(14)	R(15)	R(16)	R(17)
	C	TIP	T(10)	T(11)	T(12)	T(13)	T(14)	T(15)	T(16)	T(17)	T(18)	T(19)	T(20)
	D	RIP	R(10)	R(11)	R(12)	R(13)	R(14)	R(15)	R(16)	R(17)	R(18)	R(19)	R(20)
Z	E	EP	E(7)	E(8)	E(9)	E(10)	E(11)	E(12)	E(13)	E(14)	E(15)	E(16)	E(17)
Z	F	FP	F(7)	F(8)	F(9)	F(10)	F(11)	F(12)	F(13)	F(14)	F(15)	F(16)	F(17)

APP FIG. 1
FOR (COMM PANEL)
J98526AA

NOTES:
1. UNITS PER ① OPTION HAVE AUX SWITCH
POSITION IN COMMUNICATIONS PANEL.

CIRCUIT PACK

EQPT LOC	
DESIG	OPT
CODE	ED-2CT47
OPTION	
ELEM IDENT	TEPH.
TERM, TS LOC	36-193

CONNECTOR

DESIG	LOC
EXT DATA SET(J13)	1H3
EXT HF KEY SET(J14)	1D5
P1	1A0
TEL	1E3
	1F3

CODE	
240A (JACK)	
239A (JACK)	
KS-16A89,L3- (PLUG)	
341C (JACK)	
341C (JACK)	

01AL

DESIG	
DL(56)	

LOC	CODE
1E8	118

JACK

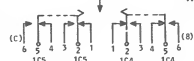
SEE CONNEC

KEY(S2)
4798N

FAC



NOR



EQPT

KEY(S3)
479G5

2W



4W

KEY(S4)
4790H

OWI



MAN

OW2

KEY(S5)
DESIG

LOC	CODE
55	1(A-H)10
	794A
	6572

PLUG
SEE CONNECTOR

RESISTOR

DESIG	LOC	CODE
R1	103	2572, 600
R2-R6	11C-E1	KS-19151, L1, 390

KEY TOP(S2)
4798N



KEY TOP(S3)
479G5



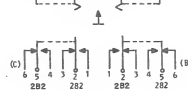
KEY TOP(S4)
4790H



① APP FIG. 2
FOR (AUX. COMM. PANEL)
J98626AD

KEY(S2)
4798T

PNL 2



KEY TOP(S2)
4798T



APP FIG. 3
FOR (COMM PANEL)
J98526AA

CONNECTOR

DESIG	LOC	CODE
J1-J12	1E7	950A
	1E8	

SWITCH

DESIG	LOC	CODE
FAC ACCESS(S1)	186	KS-19819, L43

SWITCH TOP(S1)
KS-19819, L43



AUX (SEE NOTE 1)

FAC ACCESS

① APP FIG. 5
FOR (AUX. COMM. PANEL)
J98626AD

APP FIG. 4

CONNECTOR

DESIG	LOC	CODE
CHS COMM 24/H(118)	276	241A (JACK)
CHS COMM 4H(119)	2E6	241A (JACK)

JACK
SEE CONNECTOR

LAMP

DESIG	LOC	CODE
BUSY	244	952B LED E/W 8412000B

CONNECTOR

DESIG	LOC	CODE
J1-J12	1E7	950A
	1E8	

SWITCH

DESIG	LOC	CODE
FAC ACCESS(S5)	103	KS-19819, L43
MTCE COMM GROUP(S6)	123	KS-16A89, L39

SWITCH TOP(S5)
KS-19819, L43



FAC ACCESS

SWITCH TOP(S6)
KS-16A89, L39



MTCE COMM GROUP

COMMUNICATIONS PANEL

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0 1 2 3 4 5 6 7 8 9

A

B

C

D

E

F

G

H

APP FIG. 6

FOR PATCH PANEL
J986-264X

CONNECTOR

DESIG.
JT-424

LOC.
3E3
3E4

CODE
950R

SWITCH

DESIG.
FAC ACCESS (58)

LOC.
3B1

CODE

KS-13779, L61

SWITCH TOP (58)
KS-13779, L61



FAC ACCESS

A

B

C

D

E

F

G

H

SD-99555-01-C2

98

COMMUNICATION PANEL

SD-99555-01-C2

RPL TELEPHONE LABORATORIES

CIRCUIT NOTES:

DESIG	FUSE AMP	POTENTIAL	QUANTITY
-48	0.5	-48	1 PER PANEL
BATTERY SYMBOL		VOLTAGE RANGE	
-48		45-52V	

FEATURE OR OPTION		PROVIDE	
		APP FIG. OR WIRING	QUANTITY
COMM CXT INTERFAC	SEE NOTE 105	1, 3	1
	SEE NOTE 107	R, Q	1
	ELECT HOLD FOR PRX/CD LINES WHEN FURNISHED BY LINE & TRUNK CXT FOR MICE COMM. (SEE NOTE 106)	S	1
	CHS COMM	1A 2H 1B 4H	R K
AUX COMM PANEL (SEE NOTE 302)		5	T, Y 1
PATCH PANEL		6	1
6-WIRE PATCH			2
4-WIRE PATCH			X

* NON-RECORD OPTION

RECORD OF APP FIGURES, WIRING AND APPARATUS CHANGES									
CHANGED ON ISS	IF JOB RECORDS DO NOT SPECIFY	THIS OPTION WAS FURN.	SEE NOTE	USE IN CIRCUIT					
				STD	AM	HO			
48	Y	NONE	302	Y					
	T OR V	V		T		V			
68	S, M	W OR NONE	107	S OR NONE	Q OR NONE	W			
	W, R	R	102	W	R				
88	K OR M	M		E, B	R				
88	KEYS			457A	599A				
98	F15, 6	NONE		F16, 6					
108	J OR G	J		G	J				

X NON-RECORD OPTION

CIRCUIT NOTES: (CONT)

104. THE NOMINAL CURRENT DRAIN FOR THE COMMUNICATIONS PANEL IS 0.130 AMPS @ -48 Vdc.
105. WHEN FEATURES SUCH AS LAMP INDICATION OF INCOMING CALL STATUS, AUDIO LINE SIGNALS, OR ELECTRICAL HOLD ARE REQUIRED FOR ANY OF THE FIVE LINES OF THE COMMUNICATIONS CIRCUIT, IT IS NECESSARY TO CONNECT THAT LINE TO A LINE CIRCUIT OF EITHER THE "LINE AND TRUNK CIRCUIT FOR MAINTENANCE COMMUNICATIONS OR REPAIR SERVICE" (SD-99434-01) OR THE KEY TELEPHONE SYSTEM (141 OR 142). WHEN USING THE LINE CIRCUITS OF SD-99434-01 THE CONNECTING ARRANGEMENTS ARE GIVEN IN FS10 OR FS40 (OR EQUIVALENT).
106. ELECTRICAL HOLD FOR PRX OR CD LINES MAY BE SUPPLIED BY THE LINE CIRCUITS OF THE 141 OR 142 KEY TELEPHONE SYSTEM OR THE "LINE AND TRUNK CIRCUIT FOR MAINTENANCE COMMUNICATIONS" (FS40 OF SD-99434-01). THESE LINE CIRCUITS CANNOT BE MIXED IN THE SAME GROUP OF PICK-UP KEYS BECAUSE OF DIFFERENT HOLD OPERATION OF THE KTS AND THE "LINE AND TRUNK CXT FOR MICE COMM".
107. WHEN COMMUNICATIONS LINES CONNECT TO FS10 (OR EQUIVALENT) OF THE LINE AND TRUNK CIRCUIT FOR MAINTENANCE COMMUNICATIONS OR REPAIR SERVICE (SD-99434-01) FURNISH R, Q.

(ADM)

EQUIPMENT NOTES:

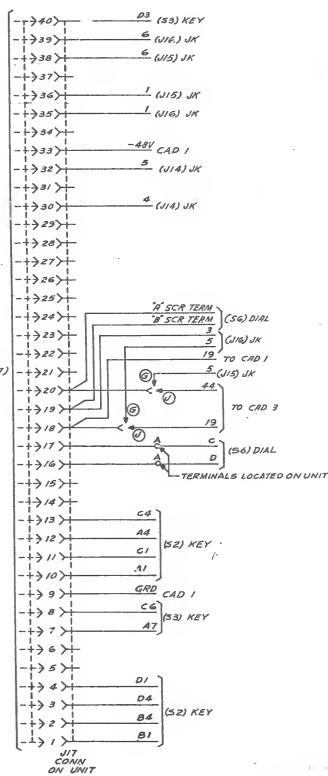
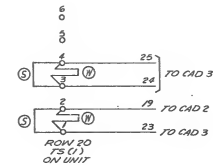
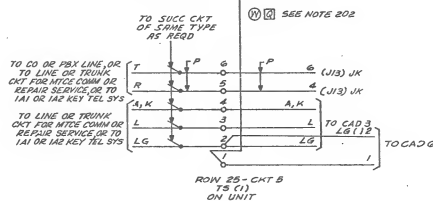
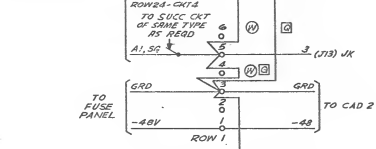
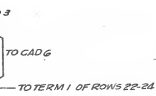
201. SHOP WIRE STRAPPING FOR ① OR ② OPTION IS ALWAYS PROVIDED ON THE INSTALLER SIDE OF THE UNIT TERMINAL STRAP.
202. THIS UNIT IS ALWAYS FURNISHED WITH ① OPTION FOR LINE OR TRUNK CXT FOR MICE COMM OR REPAIR SERVICE. SHOP WIRE STRAPS PROVIDED ON INSTALLER SIDE OF TS-1 SHALL BE CUT WHEN THE COMMUNICATIONS PANEL IS REQUIRED TO INTERFACE WITH KEY TELEPHONE SYSTEM.

(MFR DISC)

INFORMATION NOTES:

301. UNLESS OTHERWISE SPECIFIED: RESISTANCE VALUES ARE IN OHMS; CAPACITANCE VALUES ARE IN MICROFARADS, VALUES PRECEDED BY + (PLUS) OR - (MINUS) ARE IN VOLTS.
302. THIS OPTION ① AND ② ALLOWS A MAXIMUM OF 5 GROUPS OF MICE COMM TO BE ASSOCIATED WITH THE SAME MANUAL ACCESS PANEL. TYPICALLY THE "C" GROUP IS IN THE SAME BAY IMMEDIATELY TO THE LEFT AND R (RIGHT) GROUP ARE IN ADJACENT BAYS.

CAD 2
FOR J38626AA



(FOR J93626 AA)



(FOR J98626AA
OR J98626AD)
(SEE NOTE 20)



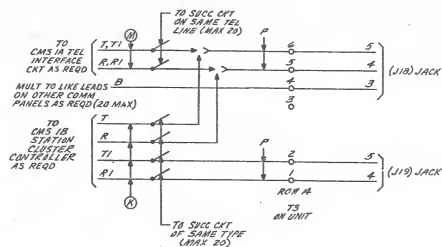
(FOR J98626AA)



(FOR J98626AD)
 AUX COMM. ENG.

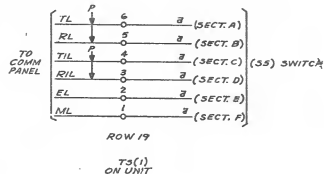


CAD 7



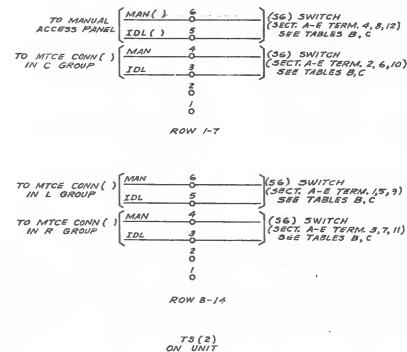
① CAD 8

FOR 478626AD
 (AUX COMM PANEL)



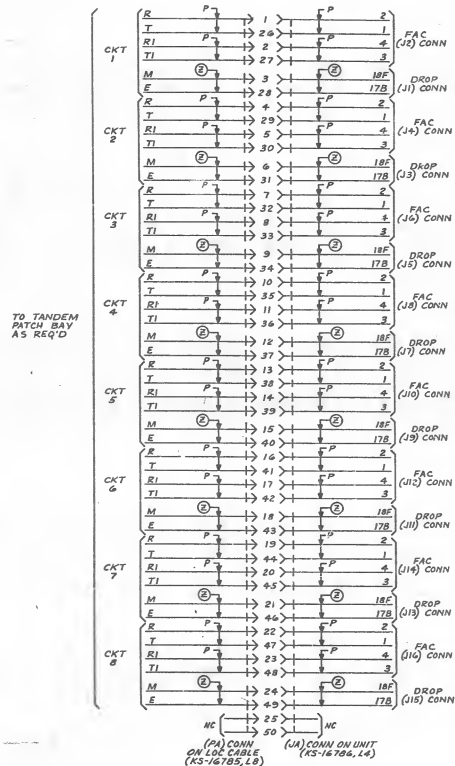
① CAD 9

FOR 478626AD
 (AUX COMM PANEL)



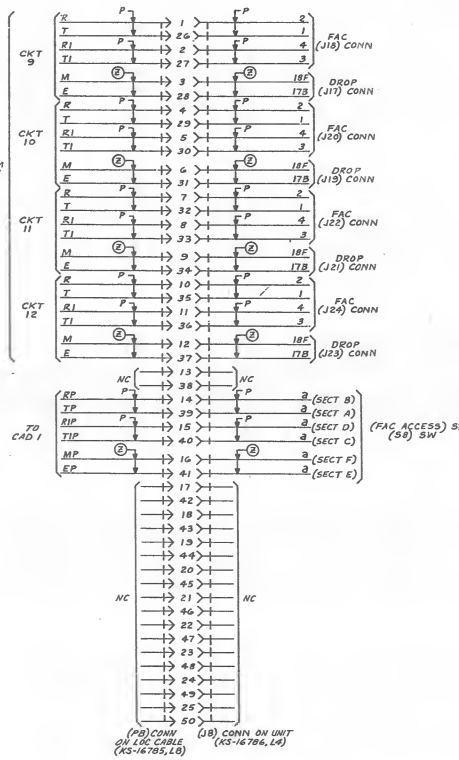
SD-99555-01-03

CAD 10
FOR PATCH PANEL
J98G2G AK



TO TANDEM
PATCH BAY
AS REQ'D

CAD 11
FOR PATCH PANEL
J98G2G AK



TO TANDEM
PATCH BAY
AS REQ'D

TO
CAD 1

(FAC ACCESS) SW
(58) SW

SD-99555-01-64

9B

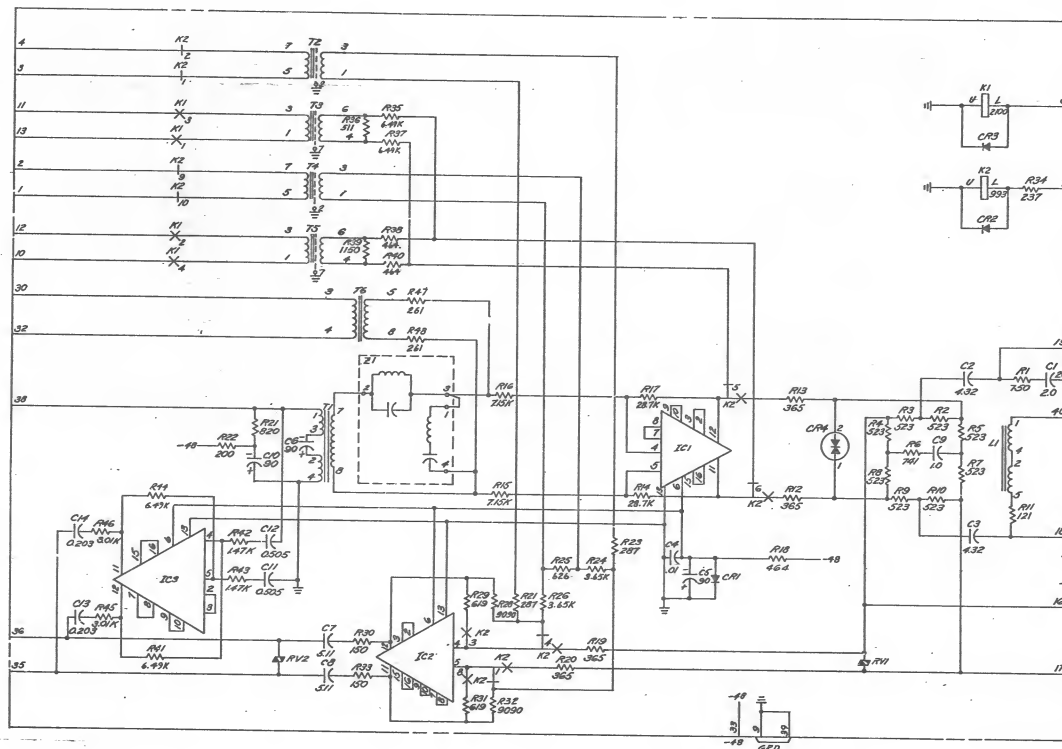
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PART OF CPS I
2-W & 4-W AMPLIFIER



2-W & 4-W AMPLIFIER
PART OF CPS I

COMMUNICATION PANEL

BELL TELEPHONE LABORATORIES
INCORPORATED

SD-99555-01-J1A

6S

3A

PART OF CPS I 2-W & 4-W AMPLIFIER

COMPONENT LIST

RELAY			
DESIG	K1	K2	
CODE	MMBA	MTL	
OPTION			
12	LOC	LOC	LOC
10		B	TC1
9		B	101
8		B	103
7		MB	105
6		MB	105
5		MB	105
4	M	TC1	MB
3	M	101	B
2	M	TC1	B
1	M	101	B
CODE	107	107	107

RELAY NOT ADJUSTABLE, REPLACE WHEN THERE IS MALFUNCTION.

AMPLIFIER

DESIG	CODE
IC1-IC3	902W

CAPACITOR

DESIG	CODE
C1	542M
C2, C3	535H
C4	KS-1440B, L34, .01
C5, C6	KS-1952A, L14, 90
C7, C8	705G, 5, 11
C9	535K
C10	KS-1952A, L14, 90
C11, C12	535H
C13, C14	535H

DIODE

DESIG	CODE
CR1	489H
CR2, CR3	446F
CR4	446AJ

INDUCTOR

DESIG	CODE
L1	162BA, 2.25H, 75

METHOD

DESIG	CODE
Z1	4161A

RESISTOR

DESIG	CODE
R1	257A, 750
R2-R5	257A, 523
R6	257A, 741
R7-R10	257A, 523
R11	KS-1440B, L34, 121
R12, R13	257A, 345
R14	257A, 28.7K
R15, R16	257A, 7.15K
R17	257A, 28.7K
R18	KS-1440B, L34, 464
R19, R20	257A, 345
R21	KS-20289, L34, 820
R22	KS-20289, L34, 200
R23	257A, 287
R24	257A, 3.65K
R25	257A, 608

COMPONENT LIST (CONT)

DESIG	CODE
R26	257A, 3.65K
R27	257A, 287
R28	257A, 9090
R29	257A, 619
R30	257A, 150
R31	257A, 619
R32	257A, 9090
R33	257A, 150
R34	KS-16714, L44, 237
R35	257A, 6.49K
R36	257A, 511
R37	257A, 6.49K
R38	257A, 464
R39	257A, 1150
R40	257A, 464
R41	257A, 6.49K
R42, R43	257A, 1.47K
R44	257A, 6.49K
R45, R46	257A, 3.01K
R47, R48	257A, 261

TRANSFORMER

DESIG	CODE
T1	26045G
T2	2602AT
T3	25328D
T4	2602AT
T5	25328D
T6	25646AC

VARIABLE

DESIG	CODE
RV1	105A
RV2	104A

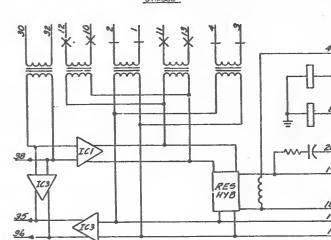
CIRCUIT DESCRIPTION

THIS CIRCUIT PROVIDES THE FOLLOWING MAJOR FUNCTIONS:
(1) 2-W TO 4-W RESISTANCE HYBRID AND BALANCE NETWORK (R2 TO R10 AND C9)
(2) TRANSMITTING AMPLIFIER (A1)
(3) RECEIVING AMPLIFIER (A2)
(4) SIDE TONE AMPLIFIER (A3)
(5) 2600HZ FILTER (M1)
(6) 2-W, 4-W, & MONITOR CONTROL FUNCTION (R1, R2)

MANUFACTURING REFERENCES

CATEGORY	NO.
CIRCUIT PACK CODE AND ASSEMBLY DRAWING	EO-2C147
CONNECTOR ON FRAME	928C

SYMBOL



NOTES:

- UNLESS OTHERWISE SPECIFIED:
RESISTANCE VALUES ARE IN OHMS; K IS FOR KILOHMS;
CAPACITANCE VALUES ARE IN MICROFARADS,
VALUES PRECEDED BY THE SYMBOL + (PLUS)
OR - (MINUS) ARE IN VOLTS.
- $\frac{1}{2}$ GROUND RETURN

2-W & 4-W AMPLIFIER
PART OF CPS I

COMMUNICATION PANEL

BELL TELEPHONE LABORATORIES
INCORPORATED

SD-99555-01-J1B

65

3A